

REMARKS

Claims 1-13 and 17-20 are pending in this application.

Claims 1-10 and 17-20 are amended herein.

Claims 21-37 are added herein. No new matter is introduced.

Claims 1, 11, 13, 17, and 21 are independent.

On October 6, 2003 a RCE and Request for Reconsideration was filed in the instant application. On November 26, 2003 a Preliminary Amendment was filed. Prior to the Examiner receiving and entering the preliminary amendment, the Examiner contacted applicants' representative Alfred A. Stadnicki (Registration No. 30,226) on December 8, 2003 to discuss the instant application. The Examiner indicated that the then pending claims (pending prior to the Preliminary Amendment of November 26, 2003) would be allowable if certain Examiner-proposed amendments were made. In particular, the Examiner proposed the following changes: amending the preamble of claims 1-10 and 17-20 to read "photovoltaic" instead of "semiconductor"; amending claims 1, 11, and 13 to read "the amorphous silicon layer being directly formed on the ... substrate"; and amending claim 17 to read "a first polycrystalline silicon layer having a first connectivity type", "an amorphous silicon layer disposed directly on the ... substrate", and "the amorphous silicon layer ~~crystallize~~ being crystallized by heat treatment".

Further, the Examiner indicated that the Preliminary Amendment of November 26, 2003 would not be entered if the proposed changes were acceptable to the applicants. On December 17, 2003 the Examiner issued the instant Official Action. This Official Action indicates that it is responsive to the October 6, 2003 Request for Reconsideration. The Preliminary Amendment of November 26, 2003 is not

addressed in the December 17, 2003 Official Action. As best understood, the Preliminary Amendment of November 26, 2003 had not been received by the Examiner at the time the December 17, 2003 Official Action was issued. However, Private Pair indicates that the Preliminary Amendment of November 26, 2003 has now been entered.

Upon reconsideration of the applied prior art, and in view of the December 8, 2003 communication with the Examiner, it is respectfully submitted that the Preliminary Amendment of November 26, 2003 amending claims 1 and 20 is not necessary to overcome the rejections. That is, claims 1 and 20, as pending on October 6, 2003, distinguish over the applied art. Accordingly, the changes made to the claims in the Preliminary Amendment are reversed by the present amendments.

In the December 17, 2003 Official Action, claims 17-20 are objected to because of use of the term "crystallize" instead of the phrase "being crystallized". Claim 17 is amended herein to cure the noted defect.

Also in the December 17, 2003 Official Action, claims 1, 3-5, 7 and 17-20 stand rejected under 35 USC §102(a), as anticipated by Guliants et al. (Photovoltaic Specialists Conference, 15-22 September 2000, IEEE, pages 154-157). Claim 2 stands rejected under 35 USC §103(a), as obvious over Guliants et al. Claims 6 and 8-13 stand rejected under 35 USC §103(a), as obvious over Guliants et al. in view of Okamoto et al. (U.S. Patent No. 6,337,224). These are the same grounds upon which the claims were previously rejected. The rejections are again respectfully traversed. All prior traversal arguments regarding the rejections based upon the above-identified art are expressly incorporated herein.

However, in the interest of expediting the passage of the present application to issuance, the claims are amended herein in view of the Examiner's proposal of December 8, 2003, but for the proposed changes to claims 1, 11, and 13 to read "the amorphous silicon layer being directly formed on the ... substrate", and the proposed change to claim 17 to read "an amorphous silicon layer disposed directly on the ... substrate".

As disclosed in Guilants, beginning on line 23 of the right column on page 156, a tandem cell can be formed by producing a polysilicon multi-junction on a 25nm thick Ni prelayer utilizing the disclosed Metal Induced Growth (MIG) process. In particular, Guilants discloses a p-n diode formed by depositing a 0.5 um thick p-type Si film on an already formed n-type polysilicon layer of the same thickness, the n-type polysilicon layer formed directly on a 25nm thick Ni film.

Because of the MIG process, both the p-type silicon film and the n-type polysilicon layer contain Ni. In particular, as disclosed, for example, at line 28 of the left column of page 155, and at line 12 of the right column of page 156, the films of Guilants are grown at 525° C. As shown in Figure 3, this temperature is within the temperature range in which the MIG process takes place, i.e., Ni diffuses into layers. Thus, the p-n diode of Guilants contains nickel.

On the other hand, and as discussed in previous responses, the disclosure of the present application teaches and claims the exclusion of nickel from certain layers, i.e., a layer formed without catalytic effect. For example, lines 12 and 13 of page 14 teach a "device, wherein a major portion, which contributes to power generation, does not contain nickel". Also for example, with reference to Figure 2, line 18 of page 12 discloses a p-type polycrystalline silicon layer 3A treated at 550°

C, line 24 of page 14 discloses a p-type polycrystalline silicon layer 5 formed at 200° C, line 27 of page 14 discloses an i-type polycrystalline silicon layer 6 formed at 300° C, and line 17 of page 15 discloses a n-type polycrystalline silicon layer 7 formed at 200° C. As taught in Guilants in Figure 3, the temperatures at which layers 5, 6, and 7 are formed (200° C, 300° C, and 200° C) are below the temperature range in which the MIG process takes place (525° C to 650° C). Accordingly, these layers necessarily lack nickel. Thus, the present invention is significantly different from the p-n diode disclosed in Guilants.

At least because of this significant difference between the presently claimed invention and Guilants, there is no need to make the proposed amendments to claims 1, 11, 13, and 17 to add "directly". This is especially true, as lines 22 to 27 of page 12 of the present application disclose that the amorphous silicon layer 3 may, if desired, be formed on the glass substrate 1, or alternatively, a metal catalyst layer 4 (for example, nickel) may, if desired, be first deposited directly on the glass substrate 1, and the amorphous silicon layer 3 then formed. Thus, the presently disclosed invention does not require the amorphous silicon layer to be directly formed on a substrate.

In view of the above-discussed differences between Guilants and the present invention, claims 21-37 are added herein to recite the invention somewhat differently. As should be understood from the above, claims 21-37 are not anticipated by, nor are they obvious in view of, any applied prior art.

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance and an early indication of the same is courteously solicited. The Examiner is respectfully requested to contact the undersigned by telephone at

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the below listed local telephone number, in order to expedite resolution of any remaining issues and further to expedite passage of the application to issue, if any further comments, questions or suggestions arise in connection with the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to deposit account 01-2135 (521.41463X00) and please credit any excess fees to such deposit account.

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP

A handwritten signature in black ink, appearing to read "Sterling W. Chandler", with a long horizontal flourish extending to the right.

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